# 佐賀大学　肥前セラミック研究センター

## 国際セミナー『伝統的磁器の最近の発展』の開催について

このたび、佐賀大学 肥前セラミック研究センターによる「2022 年度 国際セミナー『伝統的磁器の最近の発展』」を下記により開催します。

肥前セラミック研究センターは平成 29 年 4 月に設置され、陶磁器・セラミック産業における“芸術－科学－マネジメント”が融合した国際的学術研究拠点として、肥前窯業圏の産業や文化の発展への貢献を目的とし、定期的に国際セミナーを開催しています。

本セミナーは、「伝統的磁器の最近の発展」をテーマとした陶磁器のサイエンスに焦点を当てた当センターが主催する国際セミナーです。

今回のセミナーでは、フランスのソルボンヌ大学　フィリップコロンバン（Philippe COLOMBAN）教授、中国の景徳鎮陶瓷大学　李其江（Qijiang LI）准教授と佐賀大学　藤澤知績准教授に講演を行っていただきます。

皆様のご参加をお待ちしております。

記

◆日時：令和 4 年 12 月 5 日（月曜日）16 時 00 分～18 時 00 分

◆場所：オンライン Web 配信（Webex）

※ お申込みいただいた際に、接続用 URL 等をお送りさせていただきます。

◆主催：佐賀大学肥前セラミック研究センター

共催：景徳鎮陶瓷大学考古文博学院

◆発表言語：英語

◆参加方法：参加費無料（事前申込みが必要です。こちらからお申し込みください。）

申込み Forms：https://forms.office.com/r/WLb4EUtBsZ

◆プログラム：

16：00-16：05　開会挨拶

矢田光徳・佐賀大学肥前セラミック研究センター長/教授

**セッション 1**　司会：　海野雅司・佐賀大学理工学部，肥前セラミック研究センター教授

16：05-16：45　講演 1「エナメル工芸品のオンサイト（ラマン）非侵襲研究：技術交流の流れをたどる」

講師：　フィリップコロンバン　（Philippe COLOMBAN）・フランスソルボンヌ大学教授、フランス国立科学研究センター（CNRS）名誉所長/教授

**セッション 2**　司会：　呉軍明（Junming Wu）・景徳鎮陶瓷大学考古文博学院副院長/教授

16：45-17：20　講演 2「景徳鎮青花磁器の緋色」

講師：　李其江（Qijiang LI）・景徳鎮陶瓷大学古陶瓷研究所准教授

17：20-17：55　講演 3「近赤外励起の発光による磁器釉薬の新しいプローブ」

講師：　藤澤知績・佐賀大学理工学部准教授

17：55-18：00　閉会挨拶

陳寧（Ning CHEN）・景徳鎮陶瓷大学考古文博学院院長/教授

※ 各講演後、質疑応答 10 分

【本件に関する問い合わせ先】

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佐賀大学 肥前セラミック研究センター

## 2022年度 国際セミナー

# 伝統的磁器の最近の発展

参加費無料

**「エナメル工芸品のオンサイト（ラマン）非侵襲研究：技術交流の流れをたどる」**

講師：フィリップ・コロンバン （Philippe COLOMBAN）

フランス ソルボンヌ大学 教授

**「景徳鎮青花磁器の緋色」**

講師：李其江（Qijiang LI）

景徳鎮陶瓷大学古陶瓷研究所 准教授

**「近赤外励起の発光による磁器釉薬の新しいプローブ」**

講師：藤澤知績（Tomotsumi FUJISAWA）

佐賀大学理工学部 准教授

**日時** 2022年

**12月5日(月) 16:00~, Cisco Webexにより配信**

**発表言語：英語**

**参加方法：事前申込みが必要です。メールまたはこちらからお申し込みください。**

主催：佐賀大学肥前セラミック研究センター
共催：景徳鎮陶瓷大学考古文博学院
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参加者登録

# On-site (Raman) non-invasive study of enamelled artefacts. Tracing the technology exchanges

**Philippe Colomban**

*Sorbonne Université, CNRS, MONARIS umr8233, 4 Place Jussieu, 75005 Paris, France*

Coloured materials are the basis of many expressions of human craft, artistic and religious genius. The continuous miniaturization of radiation sources and detection systems for nearly 20 years has resulted in mobile instruments that perform close to that of laboratory devices. The constraints of on-site implementation and non-invasive use as well as the intrinsic weaknesses of mobile devices must be compensated for by establishing appropriate procedures. Taking as examples the analysis of enamelled objects, in particular those with sophisticated decoration (metal, glass or ceramic objects), we show the complementariness of Raman (μRaman) and X-ray fluorescence (pXRF) spectroscopies, the interest of a full-range Raman study (0-4500 cm-1) and present the procedures defined to identify the colouring agents and the crystalline or amorphous phases present in the coloured layer and the substrate, this to document the objects (dating, state of conservation, authenticity) and exchanges routes between production centres.

https://link.springer.com/book/10.1007/978-3-031-14379-3

## Biography

Philippe Colomban is CNRS Research Director Emeritus at Sorbonne Université (Paris) since 2018. After an MSc in Ceramics, Glass & Cement Engineering (ENSCI-Sèvres) in 1975 and a MSc in Solid State Physics at the Université Pierre-et-Marie Curie in 1976, Philippe Colomban obtained in 1979 the Ph.D. Hab. degree (*Docteur es-Sciences Physiques*) from the Université Pierre-et-Marie-Curie. He was one of the firsts in the world to develop Sol-Gel routes for advanced optoelectronic PLZT ceramics. He prepared (single crystals and ceramics) and studied then superionic conductors' structure and ion and proton mobility. From 1989 to 1993 he was in charge of the new projects at the Materials Department of *ONERA*, the French Establishment for Aerospace Research and Development (materials for rockets and missiles, aircraft engines, Sol-Gel routes, ceramic- or polymer-matrix composites, fibres, nanoparticle-based microwave absorbing materials and Functionally Graded composites…) and worked as Consultant at the ONERA for 10 further years. From 1994 to present, as CNRS Research Professor his research interests include Materials Science and Raman, IR and neutron spectroscopy (*in situ –operando* analysis, electrochromic cells, fuel cells, electrolysers, fibres/composites…). Attention is paid to the correlation between Raman parameters and mechanical and electrical (ionic, electronic) properties…as well to the identification of the technology used in ancient ceramics, glasses, paintings and building. Ph. Colomban published three books, more than 500 peer-review papers (H-factor wos 64), many book chapters and applied 10 patents; he presented 100+ invited talks and was visiting professor in Japan, Korea, South Africa, Serbia and Tunisia. He is Associated Editor of the Journal of Raman Spectroscopy and member of several Editorial Boards of journals devoted to Spectroscopy, Materials Science or Archaeometry.

https://scholar.google.fr/citations?user=6YnGCm8AAAAJ&hl=fr

https://www.researchgate.net/profile/Philippe_Colomban

# ‘Huoshihong’ in the blue-and-white Porcelain of Jingdezhen

**Qijiang Li,** Maolin Zhang

Ancient Ceramics Research Center, Jingdezhen Ceramic University, Jiangxi, 333001, China

The firing of blue-and-white porcelain of Jingdezhen was a breakthrough in the history of porcelain manufacturing techniques, laying the technical foundation for brilliant achievements in the production of Chinese underglaze porcelain. Blue-and-white porcelain in each period had different techniques and characteristics, which will be briefly introduced in this presentation. At the same time, the common technical characteristics of blue-and-white porcelain ‘Huoshihong’ (火石红) will be analyzed. Taking Yuan blue-and-white porcelain as an example, Energy Dispersive X-Ray Fluorescence, field emission scanning electron microscopy and X-ray Absorption Fine Structure analysis were used to study the formation mechanism of the ‘Huoshihong’ on the blue-and-white porcelain body of the Yuan Dynasty. The color rendering component for ‘Huoshihong’ is mainly α-$Fe_2O_3$. Liquid phase forms in high temperatures due to the invasion of external flux is the primary condition of the formation of ‘Huoshihong’. Fe enrichment also occurs at the places, but the $Fe^{2+}/Fe^{3+}$ ratio where ‘Huoshihong’ occurs is similar to other areas. The formation of ‘Huoshihong’ can be divided into three stages: oxidation of the body and reduction of $Fe_2O_3$, blending of $Fe^{2+}$ into the liquid phase and enriched on body surface, re-oxidation of $Fe^{2+}$ and crystallization stage of nanometer-scale α-$Fe_2O_3$. Experimental archaeological results corroborate theoretical analysis showing that the appearance and re-oxidation of $Fe^{2+}$ are necessary conditions for ‘Huoshihong’ formation.

https://doi.org/10.1016/j.jeurceramsoc.2022.07.048

## Biography

Qijiang Li, associate professor, is the director of the Ancient Ceramics Research Center of Jingdezhen Ceramic University since 2019. He obtained the master's degree in inorganic non-metallic materials from Jingdezhen Ceramic University in 2007, the Ph.D. in materials science and engineering from Jingdezhen Ceramic University in 2020. He visited in Korea Institute of Ceramic Engineering & Technology in 2012. In November 2019, he has successfully completed the training workshop on "Scientific Approaches to Ceramics and Glass Conservation" held by the IIC International Training Center for Conservation. At present, he is mainly engaged in research on the technology, protection and restoration of ancient ceramics and traditional ceramic, history of ceramic science and technology, ceramic archaeology of science. He published a book called Traditional Technology of Ancient Chinese Famous Porcelain.

# New probe for porcelain glazes by luminescence at near-infrared excitation

**Tomotsumi Fujisawa**

Faculty of Science and Engineering, Saga University, Saga, 840-8502, Japan

Raman spectroscopy is a useful technique for the nondestructive analyses of materials, including porcelain. In the Raman spectroscopic analysis, we often employ the near-infrared excitation to effectively suppress a fluorescence background from a sample. However, when we measured the Raman spectra of porcelains at 785 nm excitation, we observed a strong broad band in a high-frequency region of which origin has not been clearly elucidated. In this study, we have measured the spectra of glazed porcelains at 532, 785, and 1064 nm excitation and demonstrated that the broad feature originates from luminescence around 880 nm and not from Raman scattering. We provide experimental evidence showing that the band originates from a thin layer of glaze. Since the band shape depends on the processing temperature, the luminescence spectra can be a probe for studying the firing process and the glass formation of a glaze. We also examine the origin of luminescence using a microanalysis method.

## Biography

Tomotsumi Fujisawa is the associate professor of the faculty of science and engineering at Saga university. He studied in the graduate school of science at Kyoto University and obtained Ph.D. in chemistry in 2008. After he worked at a postdoc at Chiba university in 2008-2010, he got the JSPS (Japan Society for the Promotion of Science) postdoctoral fellow for research abroad and studied at University of California, Berkeley, for two years. Then, he worked as the special postdoctoral researcher at RIKEN in 2012-2015. He became the assistant professor at Saga university in 2015, and has been the associate professor since 2018. He is a specialist of the vibrational spectroscopy of photoreceptor proteins. He also works on the application of Raman spectroscopy in the material science.